Project abstract

This project uses a publicly available dataset compiled from the 2022 Behavioral Risk Factor Surveillance System which is a large-scale health survey administered annually by the CDC. The survey gathers detailed health-related information from over 400,000 adults across the United States, making it the largest continuous health survey system in the world. The primary focus of this dataset is on key indicators associated with heart disease—a leading cause of death across nearly all racial and ethnic groups in the U.S.

The dataset centers around the presence or absence of heart disease in respondents, recorded under the binary variable “HadHeartAttack.” In addition to this target variable, the dataset contains numerous attributes that are known to influence cardiovascular health. These include well-established risk factors such as high blood pressure, high cholesterol, smoking habits, diabetes, and obesity. The dataset also incorporates behavioral and lifestyle variables, such as levels of physical activity, alcohol consumption, and mental health indicators. They provide context to research the determinants of heart disease.

Goals for Exploratory Data Analysis:

Hypothesis 1: Individuals with high blood pressure, high cholesterol, and diabetes are significantly more likely to report having had a heart attack.

Method: Cross Validation; Logistic regression Classification; Liner Model Selection

If the hypothesis is confirmed: Screening and monitoring individuals with any combination of these conditions becomes more critical. The hospital and doctors can give better suggestions about targeted prevention.

Hypothesis 2: Poor mental health days, inactivity, alcohol use may contribute significantly to heart disease risk.

Method: Linear Model Selection; Moving Beyond Linearity and Cross validation

If the hypothesis is confirmed: It can prevent the heart disease focusing on mental health. The medical center will know how important that mental health be to a potential heart disease patient.